

# Purdue University Weed Science

## Comparisons of one-pass and two-pass programs in corn

Trial ID: 13S-SEP-CTC-07      Location: SEPAC      Trial Year: 2013  
 Protocol ID: 13S-SEP-CTC-07      Investigator: Dr. Bill Johnson  
 Project ID: 13C04H059A/ Dow Sales      Study Director: Joe Ikley  
 Sponsor Contact: Richard Porter / Fikru Haile

### General Trial Information

**Study Director:** Joe Ikley      **Title:** Research Associate  
**Investigator:** Dr. Bill Johnson      **Title:** Professor

**Discipline:** H herbicide  
**Trial Status:** F one-year/final      **Trial Reliability:** HIGH  
**Initiation Date:** 5/30/2013      **Planned Completion Date:** 8/16/2013  
**Completion Date:** 11/8/2013

### Trial Location

**City:** Butlerville      **Country:** USA United States  
**State/Prov.:** Indiana  
**Postal Code:** 47223

### Contacts

**Study Director:** Joe Ikley      **Title:** Research Associate  
**Organization:** Purdue University  
**Address:** 915 West State Street      **Phone No.:** 765-494-0891  
**City+State/Prov:** West Lafayette      **Mobile No.:** 410-596-9091  
**Postal Code:** 47907      **E-mail:** jikley@purdue.edu

**Investigator:** Dr. Bill Johnson      **Title:** Professor  
**Organization:** Purdue University  
**Address:** 915 West State Street      **Phone No.:** 765-494-4656  
**City+State/Prov:** West Lafayette      **Mobile No.:** 765-404-9801  
**Postal Code:** 47907      **E-mail:** wgj@purdue.edu

**Cooperator/Landowner**  
**Cooperator:** Don Biehle      **Role:** Superintendent  
**Organization:** Southeast Purdue Agriculture Center  
**Address 1:** 4425 East County Road 350 North  
**City:** Butlerville      **Phone No.:** 812-458-6977  
**State/Prov:** Indiana      **Fax No.:** 812-458-6979  
**Postal Code:** 47223-0216      **Mobile No.:** 812-592-8426  
**Country:** USA      United States      **E-mail:** biehled@purdue.edu

### Crop Description

**Crop 1:** ZEAMX      Zea mays  
**Variety:** Golden Harvest G10D98-3102  
**Description:** Syngenta RR

**Planting Rate, Unit:** 32000      S/A  
**Depth, Unit:** 1.5      IN  
**Row Spacing, Unit:** 30      IN  
**Spacing Within Row, Unit:** 6      IN  
**Planting Density, Unit:** 32000      S/A  
**Soil Temperature, Unit:** 76      F  
**Soil Moisture:** SLIWET slightly wet, moist  
**Seed Bed:** MEDIUM medium

**Planting Date:** 5/30/2013  
**Planting Method:** DIRDRI direct drilled  
**Planting Equipment:** JD7000  
**Emergence Date:** 6/5/2013  
**Harvest Date:** 11/8/2013  
**Harvested Width, Unit:** 5      FT  
**Harvested Length, Unit:** 25      FT  
**Harvest Equipment:** Gleaner F3  
**% Standard Moisture:** 15.5  
**Moisture Meter:** Harvest Master  
**Weighing Equipment:** Harvest Master

### Pest Description

**Pest 1 Type:** W      **Code:** SETFA *Setaria faberi*  
**Common Name:** Giant foxtail

**Pest 2 Type:** W      **Code:** IPOSS *Ipomoea* sp.  
**Common Name:** Morning glory

**Pest 3 Type:** W      **Code:** AMBEL *Ambrosia artemisiifolia*  
**Common Name:** Common ragweed

**Pest 4 Type:** W      **Code:** AMBTR *Ambrosia trifida*  
**Common Name:** Giant ragweed

**Pest 5 Type:** W      **Code:** XANST *Xanthium strumarium*  
**Common Name:** Heart-leaf cocklebur

# Purdue University Weed Science

<b>Treated Plot Width:</b> 10 FT <b>Treated Plot Length:</b> 30 FT <b>Treated Plot Area:</b> 300 FT <sup>2</sup> <b>Treatments:</b> 12 <b>Replications:</b> 4		<b>Site and Design</b> <b>Site Type:</b> FIELD field <b>Experimental Unit:</b> 1 PLOT plot <b>Tillage Type:</b> CONTIL conventional-till <b>Study Design:</b> RACOBL Randomized Complete Block (RCB)	
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Maintenance						
No.	Date	Maintenance Product Name	Description	Rate	Rate Unit	Tank Mix
1.	5/30/2013	22-11-0	Starter	180	LB A/A	no

**Comment:** Applied 22-11-0 @ 180 lb/A in row

Soil Description	
<b>Description Name:</b> SEPAC-U41 % OM: 1.3 pH: 6.5 CEC: 5.7	<b>Texture:</b> SIL silt loam <b>Soil Name:</b> Avonburg <b>Fert. Level:</b> F fair <b>Soil Drainage:</b> P poor

Application Description			
	A	B	C
<b>Application Date:</b>	5/31/2013	6/20/2013	7/5/2013
<b>Appl. Start Time:</b>	8:45	12:00	9:45
<b>Appl. Stop Time:</b>	10:00 AM	12:30 PM	10:15 AM
<b>Application Method:</b>	SPRAY	SPRAY	SPRAY
<b>Application Timing:</b>	PREPRE	ACCRST	ACCRST
<b>Application Placement:</b>	SOIL	BROADC	BROADC
<b>Applied By:</b>	Spaunhorst	Devkota	HENHEGHAN
<b>Air Temperature, Unit:</b>	77.5 F	80 F	72 F
<b>% Relative Humidity:</b>	71	47	88
<b>Wind Velocity, Unit:</b>	2 MPH	5 MPH	2.3 MPH
<b>Wind Direction:</b>	SW	SSE	N
<b>Dew Presence (Y/N):</b>	N no	N no	Y yes
<b>Soil Temperature, Unit:</b>	76 F	78 F	67 F
<b>Soil Moisture:</b>	SLIWET	DRY	WET
<b>% Cloud Cover:</b>	95	50	100
<b>Next Moisture Occurred On:</b>	5/31/2013	6/22/2013	
<b>Time to Next Moisture, Unit:</b>	1 HR	2 DAY	

Crop Stage At Each Application			
	A	B	C
<b>Crop 1 Code, BBCH Scale:</b>	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
<b>Stage Scale Used:</b>	BBCH	BBCH	BBCH
<b>Stage Majority, Percent:</b>	00	34	36
<b>Stage Minimum, Percent:</b>		34	35
<b>Stage Maximum, Percent:</b>		35	36
<b>Height, Unit:</b>		10.5 IN	35 IN
<b>Height Minimum, Maximum:</b>		9 12	34 36
<b>Stage Scale Used:</b>	BBCH	BBCH	BBCH
<b>Stage Majority, Percent:</b>	00		

## Purdue University Weed Science

Pest Stage At Each Application			
	A	B	C
<b>Pest 1 Code, Type, Scale:</b>	SETFA W	SETFA W	SETFA W
<b>Stage Majority, Percent:</b>	00	14	35G
<b>Stage Minimum, Percent:</b>		13	34G
<b>Stage Maximum, Percent:</b>		15	36G
<b>Height, Unit:</b>		5 IN	10 IN
<b>Height Minimum, Maximum:</b>		3 7	5 15
<b>Density, Unit:</b>		300 YD2	20 YD2
<b>Pest 2 Code, Type, Scale:</b>	IPOSS W	IPOSS W	IPOSS W
<b>Stage Majority, Percent:</b>	00	32	32G
<b>Stage Minimum, Percent:</b>		31	30
<b>Stage Maximum, Percent:</b>		33	34G
<b>Height, Unit:</b>		3 IN	2.5 IN
<b>Height Minimum, Maximum:</b>		2 4	1 4
<b>Density, Unit:</b>		15 YD2	10 YD2
<b>Pest 3 Code, Type, Scale:</b>	AMBEL W	AMBEL W	AMBEL W
<b>Stage Majority, Percent:</b>	00	32	
<b>Stage Minimum, Percent:</b>		31	
<b>Stage Maximum, Percent:</b>		33	
<b>Height, Unit:</b>		3 IN	
<b>Height Minimum, Maximum:</b>		2 4	
<b>Density, Unit:</b>		25 YD2	
<b>Pest 4 Code, Type, Scale:</b>	AMBTR W	AMBTR W	AMBTR W
<b>Stage Majority, Percent:</b>	00	32	
<b>Stage Minimum, Percent:</b>		31	
<b>Stage Maximum, Percent:</b>		33	
<b>Height, Unit:</b>		4.5 IN	
<b>Height Minimum, Maximum:</b>		4 5	
<b>Density, Unit:</b>		25 YD2	
<b>Pest 5 Code, Type, Scale:</b>	XANST W	XANST W	XANST W
<b>Stage Majority, Percent:</b>	00	32	
<b>Stage Minimum, Percent:</b>		31	
<b>Stage Maximum, Percent:</b>		34	
<b>Height, Unit:</b>		4.5 IN	
<b>Height Minimum, Maximum:</b>		3 6	
<b>Density, Unit:</b>		25 YD2	

## Purdue University Weed Science

Application Equipment			
	A	B	C
<b>Appl. Equipment:</b>	CO2 Backpack	XR Backpack	XR Backpack
<b>Equipment Type:</b>	SPRBAC	SPRBAC	SPRBAC
<b>Operation Pressure, Unit:</b>	17 PSI	17 PSI	17 PSI
<b>Nozzle Type:</b>	Flat Fan	AI	AI
<b>Nozzle Size:</b>	XR11002	XR110015	XR110015
<b>Nozzle Spacing, Unit:</b>	15 IN	15 IN	15 IN
<b>Nozzles/Row:</b>	8	8	8
<b>Boom Length, Unit:</b>	10 FT	7.5 FT	7.5 FT
<b>Boom Height, Unit:</b>	18 IN	18 IN	18 IN
<b>Ground Speed, Unit:</b>	3 MPH	3 MPH	3 MPH
<b>Carrier:</b>	H2O	H2O	H2O
<b>Water Hardness (ppm CaCO3):</b>	150	150	150
<b>Spray Volume, Unit:</b>	15 GAL/AC	15 GAL/AC	15 GAL/AC
<b>Mix Size, Unit:</b>	1.8 Liters	1.8 Liters	1.8 Liters
<b>Propellant:</b>	CO2	CO2	CO2
<b>Tank Mix (Y/N):</b>	N no	N no	N no

Trial Comments

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Trial ID: 13S-SEP-CTC-07      Location: SEPAC      Trial Year: 2013  
 Protocol ID: 13S-SEP-CTC-07      Investigator: Dr. Bill Johnson  
 Project ID: 13C04H059A/ Dow Sales      Study Director: Joe Ikley  
 Sponsor Contact: Richard Porter / Fikru Haile

Reps: 4      Plots: 10 by 30 feet  
 Spray vol: 15 gal/ac      Mix size: 1.8 liters (min 1.5642)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Other Rate	Other Unit	Appl Code	Amt to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	Untreated Check										101	503	604	903
2	Impact	2.8	LBA/GAL	SC	24.6	g ai/ha	1 fl oz/a		B	0.9392 ml/mx	102	304	703	1003
	AAtrex	4	LBA/GAL	F	560	g ai/ha	1 pt/a		B	14.97 ml/mx				
	MSO	100	%	L	1	% v/v	1	% v/v	B	18.0 ml/mx				
	UAN 28%	100	%	L	2.5	% v/v	2.5	% v/v	B	45.0 ml/mx				
3	Roundup Powermax	4.5	LBAE/GAL	SL	1260	g ae/ha	32 fl oz/a		B	29.93 ml/mx	103	405	701	905
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	B	45.0 ml/mx				
4	Roundup Powermax	4.5	LBAE/GAL	SL	1260	g ae/ha	32 fl oz/a		B	29.93 ml/mx	104	303	505	1002
	Impact	2.8	LBA/GAL	SC	24.6	g ai/ha	1 fl oz/a		B	0.9392 ml/mx				
	AAtrex	4	LBA/GAL	F	560	g ai/ha	1 pt/a		B	14.97 ml/mx				
	MSO	100	%	L	0.5	% v/v	0.5	% v/v	B	9.0 ml/mx				
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	B	45.0 ml/mx				
5	Warrant	3	LBA/GAL	EC	1260	g ai/ha	3 pt/a		B	44.9 ml/mx	105	401	605	803
	Roundup Powermax	4.5	LBAE/GAL	SL	1260	g ae/ha	32 fl oz/a		B	29.93 ml/mx				
	Impact	2.8	LBA/GAL	SC	24.6	g ai/ha	1 fl oz/a		B	0.9392 ml/mx				
	AAtrex	4	LBA/GAL	F	560	g ai/ha	1 pt/a		B	14.97 ml/mx				
	MSO	100	%	L	0.5	% v/v	0.5	% v/v	B	9.0 ml/mx				
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	B	45.0 ml/mx				
6	Halex GT	4.38	LBA/GAL	L	2210	g ai/ha	3.6 pt/a		B	53.94 ml/mx	201	305	702	904
	AAtrex	4	LBA/GAL	F	560	g ai/ha	1 pt/a		B	14.97 ml/mx				
	NIS	100	%	SL	0.25	% v/v	0.25	% v/v	B	4.5 ml/mx				
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	B	45.0 ml/mx				
7	Keystone NXT	5.25	LBA/GAL	L	4130	g ai/ha	2.8 qt/a		A	84.1 ml/mx	202	504	801	901
	Hornet	68.5	%	WDG	192	g ai/ha	4 oz/a		A	3.596 g/mx				
	DURANGO DMA	480	GAE/L	SL	840	g ae/ha	1.5 pt/a		C	22.45 ml/mx				
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	C	45.0 ml/mx				
8	Surestart	4.25	LB/GAL	L	1190	g ai/ha	2 pt/a		A	29.93 ml/mx	203	502	603	902
	DURANGO DMA	480	GAE/L	SL	840	g ae/ha	1.5 pt/a		C	22.45 ml/mx				
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	C	45.0 ml/mx				
9	Surestart	4.25	LB/GAL	L	1490	g ai/ha	2.5 pt/a		A	37.48 ml/mx	204	403	704	802
	DURANGO DMA	480	GAE/L	SL	840	g ae/ha	1.5 pt/a		C	22.45 ml/mx				
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	C	45.0 ml/mx				
10	Surestart	4.25	LB/GAL	L	1490	g ai/ha	2.5 pt/a		A	37.48 ml/mx	205	404	601	804
	AAtrex	4	LBA/GAL	F	1120	g ai/ha	1 qt/a		A	29.93 ml/mx				
	DURANGO DMA	480	GAE/L	SL	840	g ae/ha	1.5 pt/a		C	22.45 ml/mx				
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	C	45.0 ml/mx				
11	Surestart	4.25	LB/GAL	L	1190	g ai/ha	2 pt/a		B	29.93 ml/mx	301	501	602	805
	DURANGO DMA	480	GAE/L	SL	840	g ae/ha	1.5 pt/a		B	22.45 ml/mx				
	N-Pak AMS	3.4	LBA/GAL	SL	2.5	% v/v	2.5	% v/v	B	45.0 ml/mx				
12	Untreated Check										302	402	705	1001

Sort Order: Replicate 1

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
2.818	ml	Impact	2.8	SC	
89.801	ml	AAtrex	4	F	
36.000	ml	MSO	100	L	
45.000	ml	UAN 28%	100	L	
89.801	ml	Roundup Powermax	4.5	SL	
405.000	ml	N-Pak AMS	3.4	SL	

## Purdue University Weed Science

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
44.900	ml	Warrant	3	EC	
53.941	ml	Halex GT	4.38	L	
4.500	ml	NIS	100	SL	
84.099	ml	Keystone NXT	5.25	L	
3.596	g	Hornet	68.5	WDG	
112.251	ml	DURANGO DMA	480	SL	
134.827	ml	Surestart	4.25	L	

\* 'Per area' calculations based on spray volume= 15 gal/ac, mix size= 1.8 liters (mix size basis).

\* 'Per volume' calculations use spray volume= 15 gal/ac, mix size= 1.8 liters.

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## Comparisons of one-pass and two-pass programs in corn

Trial ID: 13S-SEP-CTC-07  
 Protocol ID: 13S-SEP-CTC-07  
 Project ID: 13C04H059A/ Dow Sales

Location: SEPAC      Trial Year: 2013  
 Investigator: Dr. Bill Johnson  
 Study Director: Joe Ikley  
 Sponsor Contact: Richard Porter / Fikru Haile

Pest Type		W Weed	W Weed	W Weed	W Weed	W Weed
Pest Code		SETFA	AMBTR	XANST		SETFA
Pest Scientific Name		Setaria faberi	Ambrosia trifi>	Xanthium strum>		Setaria faberi
Pest Name		Giant foxtail	Giant ragweed	Heart-leaf coc>		Giant foxtail
Crop Code	ZEAMX				ZEAMX	
BBCH Scale	BCOR				BCOR	
Crop Scientific Name	Zea mays				Zea mays	
Crop Name	Corn				Corn	
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P	PLOT C	PLOT P
Rating Date	6/27/2013	6/27/2013	6/27/2013	6/27/2013	7/5/2013	7/5/2013
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO
Rating Unit	%	%	%	%	%	%
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Days After First/Last Applic.	27 7	27 7	27 7	27 7	35 15	35 15
Trt-Eval Interval	7 DA-B	7 DA-B	7 DA-B	7 DA-B	0 DA-C	0 DA-C
ARM Action Codes	P	P	P	P	P	P
Number of Decimals	0	0	0	0	0	0
Trt Treatment	Rate	Appl				
No. Name	Rate Unit	Code Plot	1	2	3	4
1 Untreated Check		101	0	0	0	0
		503	0	0	0	0
		604	0	0	0	0
		903	0	0	0	0
		Mean =	0	0	0	0
2 Impact	24.6 g ai/ha	B 102	0	90	95	95
AAtrex	560 g ai/ha	B 304	0	90	100	100
MSO	1 % v/v	B 703	0	85	90	100
UAN 28%	2.5 % v/v	B 1003	0	100	100	100
		Mean =	0	91	96	99
3 Roundup Powermax	1260 g ae/ha	B 103	0	100	80	80
N-Pak AMS	2.5 % v/v	B 405	0	100	80	90
		701	0	100	95	100
		905	0	95	90	100
		Mean =	0	99	86	93
4 Roundup Powermax	1260 g ae/ha	B 104	0	100	100	100
Impact	24.6 g ai/ha	B 303	5	100	100	100
AAtrex	560 g ai/ha	B 505	0	100	95	100
MSO	0.5 % v/v	B 1002	0	100	100	100
N-Pak AMS	2.5 % v/v	B				
		Mean =	1	100	99	100
5 Warrant	1260 g ai/ha	B 105	5	90	100	100
Roundup Powermax	1260 g ae/ha	B 401	5	90	100	100
Impact	24.6 g ai/ha	B 605	0	100	100	100
AAtrex	560 g ai/ha	B 803	0	100	100	95
MSO	0.5 % v/v	B				
N-Pak AMS	2.5 % v/v	B				
		Mean =	3	95	100	99
6 Halex GT	2210 g ai/ha	B 201	0	100	95	100
AAtrex	560 g ai/ha	B 305	0	95	100	100
NIS	0.25 % v/v	B 702	0	100	95	90
N-Pak AMS	2.5 % v/v	B 904	0	100	100	100
		Mean =	0	99	98	98
7 Keystone NXT	4130 g ai/ha	A 202	5	90	95	100
Hornet	192 g ai/ha	A 504	0	95	90	90
DURANGO DMA	840 g ae/ha	C 801	0	100	100	100
N-Pak AMS	2.5 % v/v	C 901	0	100	100	100
		Mean =	1	96	96	98
8 Surestart	1190 g ai/ha	A 203	0	70	90	100
DURANGO DMA	840 g ae/ha	C 502	0	90	95	95
N-Pak AMS	2.5 % v/v	C 603	0	60	80	100
		902	0	90	95	100
		Mean =	0	78	90	99

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Pest Type	W Weed	W Weed	W Weed	W Weed					
Pest Code	SETFA	AMBTR	XANST	SETFA					
Pest Scientific Name	Setaria faberi	Ambrosia trifi>	Xanthium strum>	Setaria faberi					
Pest Name	Giant foxtail	Giant ragweed	Heart-leaf coc>	Giant foxtail					
Crop Code	ZEAMX			ZEAMX					
BBCH Scale	BCOR			BCOR					
Crop Scientific Name	Zea mays			Zea mays					
Crop Name	Corn			Corn					
Part Rated	PLOT C	PLOT P	PLOT P	PLOT C					
Rating Date	6/27/2013	6/27/2013	6/27/2013	7/5/2013					
Rating Type	PHYGEN	CONTRO	CONTRO	PHYGEN					
Rating Unit	%	%	%	%					
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT					
Days After First/Last Applic.	27 7	27 7	27 7	35 15					
Trt-Eval Interval	7 DA-B	7 DA-B	7 DA-B	0 DA-C					
ARM Action Codes	P	P	P	P					
Number of Decimals	0	0	0	0					
Trt Treatment	Rate	Appl							
No. Name	Rate Unit	Code Plot	1	2	3	4	5	6	
9 Surestart	1490 g ai/ha	A 204	0	85	95	100	0	50	
DURANGO DMA	840 g ae/ha	C 403	0	70	80	90	0	50	
N-Pak AMS	2.5 % v/v	C 704	0	80	90	100	0	60	
		802	0	85	90	100	0	80	
		Mean =	0	80	89	98	0	60	
10 Surestart	1490 g ai/ha	A 205	0	100	90	100	0	75	
AAtrex	1120 g ai/ha	A 404	0	70	90	100	0	70	
DURANGO DMA	840 g ae/ha	C 601	0	95	75	90	0	80	
N-Pak AMS	2.5 % v/v	C 804	0	100	100	100	0	90	
		Mean =	0	91	89	98	0	79	
11 Surestart	1190 g ai/ha	B 301	0	80	80	100	0	95	
DURANGO DMA	840 g ae/ha	B 501	0	100	80	100	0	95	
N-Pak AMS	2.5 % v/v	B 602	0	100	90	100	0	95	
		805	0	95	100	100	0	95	
		Mean =	0	94	88	100	0	95	
12 Untreated Check		302	0	0	0	0	0	0	
		402	0	0	0	0	0	0	
		705	0	0	0	0	0	0	
		1001	0	0	0	0	0	0	
		Mean =	0	0	0	0	0	0	

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Pest Type	W Weed	W Weed		W Weed	W Weed		
Pest Code	AMBTR	XANST		SETFA	AMBTR		
Pest Scientific Name	Ambrosia trifi>	Xanthium strum>		Setaria faberi	Ambrosia trifi>		
Pest Name	Giant ragweed	Heart-leaf coc>		Giant foxtail	Giant ragweed		
Crop Code			ZEAMX				
BBCH Scale			BCOR				
Crop Scientific Name			Zea mays				
Crop Name			Corn				
Part Rated	PLOT P	PLOT P	PLOT C	PLOT P	PLOT P		
Rating Date	7/5/2013	7/5/2013	7/18/2013	7/18/2013	7/18/2013		
Rating Type	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%		
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Days After First/Last Applic.	35 15	35 15	48 13	48 13	48 13		
Trt-Eval Interval	0 DA-C	0 DA-C	28 DA-B	28 DA-B	28 DA-B		
ARM Action Codes	P	P	P	P	P		
Number of Decimals	0	0	0	0	0		
Trt Treatment	Rate	Appl					
No. Name	Rate Unit	Code Plot	7	8	9	10	11
1 Untreated Check		101	0	0	0	0	0
		503	0	0	0	0	0
		604	0	0	0	0	0
		903	0	0	0	0	0
		Mean =	0	0	0	0	0
2 Impact	24.6 g ai/ha	B 102	95	95	0	80	95
AAtrex	560 g ai/ha	B 304	95	95	0	80	100
MSO	1 % v/v	B 703	95	90	0	85	100
UAN 28%	2.5 % v/v	B 1003	95	95	0	85	100
		Mean =	95	94	0	83	99
3 Roundup Powermax	1260 g ae/ha	B 103	70	100	0	70	90
N-Pak AMS	2.5 % v/v	B 405	80	80	0	65	100
		701	80	80	0	70	100
		905	90	90	0	60	80
		Mean =	80	88	0	66	93
4 Roundup Powermax	1260 g ae/ha	B 104	90	90	0	75	95
Impact	24.6 g ai/ha	B 303	95	95	0	80	95
AAtrex	560 g ai/ha	B 505	95	95	0	80	90
MSO	0.5 % v/v	B 1002	95	90	0	95	100
N-Pak AMS	2.5 % v/v	B					
		Mean =	94	93	0	83	95
5 Warrant	1260 g ai/ha	B 105	95	95	0	80	95
Roundup Powermax	1260 g ae/ha	B 401	90	95	0	80	80
Impact	24.6 g ai/ha	B 605	95	95	0	70	90
AAtrex	560 g ai/ha	B 803	95	90	0	90	100
MSO	0.5 % v/v	B					
N-Pak AMS	2.5 % v/v	B					
		Mean =	94	94	0	80	91
6 Halex GT	2210 g ai/ha	B 201	90	90	0	80	95
AAtrex	560 g ai/ha	B 305	95	80	0	100	100
NIS	0.25 % v/v	B 702	95	90	0	100	100
N-Pak AMS	2.5 % v/v	B 904	100	100	0	100	100
		Mean =	95	90	0	95	99
7 Keystone NXT	4130 g ai/ha	A 202	95	95	0	100	100
Hornet	192 g ai/ha	A 504	90	90	0	100	95
DURANGO DMA	840 g ae/ha	C 801	95	90	0	100	100
N-Pak AMS	2.5 % v/v	C 901	95	95	0	100	100
		Mean =	94	93	0	100	99
8 Surestart	1190 g ai/ha	A 203	90	95	0	95	100
DURANGO DMA	840 g ae/ha	C 502	70	95	0	100	95
N-Pak AMS	2.5 % v/v	C 603	70	95	0	100	100
		902	90	95	0	100	100
		Mean =	80	95	0	99	99

# Purdue University Weed Science

Pest Type	W Weed	W Weed		W Weed	W Weed
Pest Code	AMBTR	XANST		SETFA	AMBTR
Pest Scientific Name	Ambrosia trifi>	Xanthium strum>		Setaria faberi	Ambrosia trifi>
Pest Name	Giant ragweed	Heart-leaf coc>		Giant foxtail	Giant ragweed
Crop Code				ZEAMX	
BBCH Scale				BCOR	
Crop Scientific Name				Zea mays	
Crop Name				Corn	
Part Rated	PLOT P	PLOT P	PLOT C	PLOT P	PLOT P
Rating Date	7/5/2013	7/5/2013	7/18/2013	7/18/2013	7/18/2013
Rating Type	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO
Rating Unit	%	%	%	%	%
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Days After First/Last Applic.	35 15	35 15	48 13	48 13	48 13
Trt-Eval Interval	0 DA-C	0 DA-C	28 DA-B	28 DA-B	28 DA-B
ARM Action Codes	P	P	P	P	P
Number of Decimals	0	0	0	0	0
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code Plot	7	8	9
9 Surestart	1490 g ai/ha	A 204	75	90	0
DURANGO DMA	840 g ae/ha	C 403	80	90	0
N-Pak AMS	2.5 % v/v	C 704	90	90	0
		802	95	95	0
		Mean =	85	91	0
10 Surestart	1490 g ai/ha	A 205	90	90	0
AAtrex	1120 g ai/ha	A 404	80	95	0
DURANGO DMA	840 g ae/ha	C 601	95	90	0
N-Pak AMS	2.5 % v/v	C 804	95	95	0
		Mean =	90	93	0
11 Surestart	1190 g ai/ha	B 301	90	90	0
DURANGO DMA	840 g ae/ha	B 501	80	90	0
N-Pak AMS	2.5 % v/v	B 602	95	95	0
		805	95	90	0
		Mean =	90	91	0
12 Untreated Check		302	0	0	0
		402	0	0	0
		705	0	0	0
		1001	0	0	0
		Mean =	0	0	0

# Purdue University Weed Science

Pest Type	W Weed	W Weed	W Weed	W Weed				
Pest Code	XANST	SETFA	AMBTR	XANST				
Pest Scientific Name	Xanthium strum>	Setaria faberi	Ambrosia trifi>	Xanthium strum>				
Pest Name	Heart-leaf coc>	Giant foxtail	Giant ragweed	Heart-leaf coc>				
Crop Code					ZEAMX	ZEAMX		
BBCH Scale					BCOR	BCOR		
Crop Scientific Name					Zea mays	Zea mays		
Crop Name					Corn	Corn		
Part Rated	PLOT P	PLOT P	PLOT P	PLOT P	YIELD C	YIELD C		
Rating Date	7/18/2013	8/22/2013	8/22/2013	8/22/2013	11/8/2013	11/8/2013		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	YIELD	YIELD		
Rating Unit	%	%	%	%	lb/plot	bu/ac		
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Days After First/Last Applic.	48 13	83 48	83 48	83 48	161 126	161 126		
Trt-Eval Interval	28 DA-B	63 DA-B	63 DA-B	63 DA-B				
ARM Action Codes	P	P	P	P		TY1		
Number of Decimals	0	0	0	0		1		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code Plot	12	13	14	15	16	17
1 Untreated Check		101	0	0	0	0	1.9208152	11.7
		503	0	0	0	0	5.6372226	34.5
		604	0	0	0	0	16.5710157	101.3
		903	0	0	0	0	8.0430178*	49.2*
		Mean =	0	0	0	0	8.0430178	49.2
2 Impact	24.6 g ai/ha	B 102	95	80	90	90	27.2893547	166.8
AAtrex	560 g ai/ha	B 304	100	85	90	90	29.1744949	178.3
MSO	1 % v/v	B 703	95	85	90	90	33.8604164	207.0
UAN 28%	2.5 % v/v	B 1003	100	100	100	80	20.1796970	123.3
		Mean =	98	88	93	88	27.6259908	168.9
3 Roundup Powermax	1260 g ae/ha	B 103	85	75	85	85	23.8961204	146.1
N-Pak AMS	2.5 % v/v	B 405	75	65	100	50	30.8441881	188.5
		701	50	90	95	70	31.3289441	191.5
		905	60	84*	80	85	28.6897509*	175.4*
		Mean =	68	79	90	73	28.6897509	175.4
4 Roundup Powermax	1260 g ae/ha	B 104	95	80	80	90	23.2497883	142.1
Impact	24.6 g ai/ha	B 303	95	80	95	100	30.8980511	188.9
AAtrex	560 g ai/ha	B 505	90	80	100	90	30.8980511	188.9
MSO	0.5 % v/v	B 1002	85	100	100	80	23.3036443	142.4
N-Pak AMS	2.5 % v/v	B						
		Mean =	91	85	94	90	27.0873837	165.6
5 Warrant	1260 g ai/ha	B 105	90	70	90	80	21.4723681	131.2
Roundup Powermax	1260 g ae/ha	B 401	80	80	95	85	31.7059742	193.8
Impact	24.6 g ai/ha	B 605	95	70	95	95	32.1907232	196.8
AAtrex	560 g ai/ha	B 803	95	95	100	100	28.4563552*	173.9*
MSO	0.5 % v/v	B						
N-Pak AMS	2.5 % v/v	B						
		Mean =	90	79	95	90	28.4563552	173.9
6 Halex GT	2210 g ai/ha	B 201	90	90	95	65	24.8117475	151.7
AAtrex	560 g ai/ha	B 305	100	95	95	95	29.2283659	178.7
NIS	0.25 % v/v	B 702	85	100	100	95	34.7760425	212.6
N-Pak AMS	2.5 % v/v	B 904	100	100	100	100	29.6053853*	181.0*
		Mean =	94	96	98	89	29.6053853	181.0
7 Keystone NXT	4130 g ai/ha	A 202	100	95	100	100	27.9356948	170.8
Hornet	192 g ai/ha	A 504	100	100	100	100	33.3218033	203.7
DURANGO DMA	840 g ae/ha	C 801	100	100	100	100	30.6287491*	187.2*
N-Pak AMS	2.5 % v/v	C 901	100	100	100	100	30.6287491*	187.2*
		Mean =	100	99	100	100	30.6287491	187.2
8 Surestart	1190 g ai/ha	A 203	100	95	100	100	29.3899489	179.6
DURANGO DMA	840 g ae/ha	C 502	99	100	100	100	33.8604164	207.0
N-Pak AMS	2.5 % v/v	C 603	100	100	90	90	33.9681434	207.6
		902	100	100	100	100	32.4061696*	198.1*
		Mean =	100	99	98	98	32.4061696	198.1

# Purdue University Weed Science

Pest Type	W Weed	W Weed	W Weed	W Weed				
Pest Code	XANST	SETFA	AMBTR	XANST				
Pest Scientific Name	Xanthium strum>	Setaria faberi	Ambrosia trifi>	Xanthium strum>				
Pest Name	Heart-leaf coc>	Giant foxtail	Giant ragweed	Heart-leaf coc>				
Crop Code					ZEAMX	ZEAMX		
BBCH Scale					BCOR	BCOR		
Crop Scientific Name					Zea mays	Zea mays		
Crop Name					Corn	Corn		
Part Rated	PLOT P	PLOT P	PLOT P	PLOT P	YIELD C	YIELD C		
Rating Date	7/18/2013	8/22/2013	8/22/2013	8/22/2013	11/8/2013	11/8/2013		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	YIELD	YIELD		
Rating Unit	%	%	%	%	lb/plot	bu/ac		
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Days After First/Last Applic.	48 13	83 48	83 48	83 48	161 126	161 126		
Trt-Eval Interval	28 DA-B	63 DA-B	63 DA-B	63 DA-B				
ARM Action Codes	P	P	P	P		TY1		
Number of Decimals	0	0	0	0		1		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code Plot	12	13	14	15	16	17
9 Surestart	1490 g ai/ha	A 204	100	90	100	100	26.8584697	164.2
DURANGO DMA	840 g ae/ha	C 403	100	100	100	100	32.1907232	196.8
N-Pak AMS	2.5 % v/v	C 704	95	100	100	95	33.0525013	202.0
		802	100	100	100	100	30.7005647*	187.7*
		Mean =	99	98	100	99	30.7005647	187.7
10 Surestart	1490 g ai/ha	A 205	100	90	100	100	30.6826051	187.5
AAtrex	1120 g ai/ha	A 404	100	100	100	100	31.7598302	194.1
DURANGO DMA	840 g ae/ha	C 601	100	100	100	100	36.8227657	225.1
N-Pak AMS	2.5 % v/v	C 804	100	100	100	100	33.0884003*	202.2*
		Mean =	100	98	100	100	33.0884003	202.2
11 Surestart	1190 g ai/ha	B 301	90	80	90	90	31.6521182	193.5
DURANGO DMA	840 g ae/ha	B 501	90	100	95	80	34.1027944*	208.4*
N-Pak AMS	2.5 % v/v	B 602	100	95	95	95	36.5534707	223.4
		805	100	100	100	100	34.1027944*	208.4*
		Mean =	95	94	95	91	34.1027944	208.4
12 Untreated Check		302	0	0	0	0	18.0791188	110.5
		402	0	0	0	0	5.6372226	34.5
		705	0	0	0	0	8.3841408	51.2
		1001	0	0	0	0	10.1615460	62.1
		Mean =	0	0	0	0	10.5655071	64.6

# Purdue University Weed Science

Pest Type					
Pest Code					
Pest Scientific Name					
Pest Name					
Crop Code					ZEAMX
BBCH Scale					BCOR
Crop Scientific Name					Zea mays
Crop Name					Corn
Part Rated					YIELD C
Rating Date					11/8/2013
Rating Type					YIELD
Rating Unit					kg/ha
Sample Size, Unit					1 PLOT
Days After First/Last Applic.					161 126
Trt-Eval Interval					
ARM Action Codes					TY2
Number of Decimals					1
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code Plot			18
1 Untreated Check			101		736.9
			503		2162.8
			604		6357.7
			903		3085.8*
			Mean =		3085.8
2 Impact	24.6 g ai/ha	B	102		10469.9
AAtrex	560 g ai/ha	B	304		11193.2
MSO	1 % v/v	B	703		12991.0
UAN 28%	2.5 % v/v	B	1003		7742.2
			Mean =		10599.1
3 Roundup Powermax	1260 g ae/ha	B	103		9168.1
N-Pak AMS	2.5 % v/v	B	405		11833.8
			701		12019.8
			905		11007.2*
			Mean =		11007.2
4 Roundup Powermax	1260 g ae/ha	B	104		8920.1
Impact	24.6 g ai/ha	B	303		11854.4
AAtrex	560 g ai/ha	B	505		11854.4
MSO	0.5 % v/v	B	1002		8940.7
N-Pak AMS	2.5 % v/v	B			
			Mean =		10392.4
5 Warrant	1260 g ai/ha	B	105		8238.2
Roundup Powermax	1260 g ae/ha	B	401		12164.4
Impact	24.6 g ai/ha	B	605		12350.4
AAtrex	560 g ai/ha	B	803		10917.7*
MSO	0.5 % v/v	B			
N-Pak AMS	2.5 % v/v	B			
			Mean =		10917.7
6 Halex GT	2210 g ai/ha	B	201		9519.4
AAtrex	560 g ai/ha	B	305		11213.8
NIS	0.25 % v/v	B	702		13342.3
N-Pak AMS	2.5 % v/v	B	904		11358.5*
			Mean =		11358.5
7 Keystone NXT	4130 g ai/ha	A	202		10717.9
Hornet	192 g ai/ha	A	504		12784.3
DURANGO DMA	840 g ae/ha	C	801		11751.1*
N-Pak AMS	2.5 % v/v	C	901		11751.1*
			Mean =		11751.1
8 Surestart	1190 g ai/ha	A	203		11275.8
DURANGO DMA	840 g ae/ha	C	502		12991.0
N-Pak AMS	2.5 % v/v	C	603		13032.3
			902		12433.1*
			Mean =		12433.1

# Purdue University Weed Science

Pest Type				
Pest Code				
Pest Scientific Name				
Pest Name				
Crop Code				ZEAMX
BBCH Scale				BCOR
Crop Scientific Name				Zea mays
Crop Name				Corn
Part Rated				YIELD C
Rating Date				11/8/2013
Rating Type				YIELD
Rating Unit				kg/ha
Sample Size, Unit	1			PLOT
Days After First/Last Applic.	161			126
Trt-Eval Interval				
ARM Action Codes				TY2
Number of Decimals				1
Trt Treatment	Rate	Appl		
No. Name	Rate Unit	Code Plot	18	
9 Surestart	1490 g ai/ha	A 204	10304.6	
DURANGO DMA	840 g ae/ha	C 403	12350.4	
N-Pak AMS	2.5 % v/v	C 704	12681.0	
		802	11778.7*	
		Mean =	11778.7	
10 Surestart	1490 g ai/ha	A 205	11771.8	
AAtrex	1120 g ai/ha	A 404	12185.1	
DURANGO DMA	840 g ae/ha	C 601	14127.5	
N-Pak AMS	2.5 % v/v	C 804	12694.8*	
		Mean =	12694.8	
11 Surestart	1190 g ai/ha	B 301	12143.7	
DURANGO DMA	840 g ae/ha	B 501	13084.0*	
N-Pak AMS	2.5 % v/v	B 602	14024.2	
		805	13084.0*	
		Mean =	13084.0	
12 Untreated Check		302	6936.3	
		402	2162.8	
		705	3216.7	
		1001	3898.6	
		Mean =	4053.6	

## Purdue University Weed Science

### Comparisons of one-pass and two-pass programs in corn

Trial ID: 13S-SEP-CTC-07      Location: SEPAC      Trial Year: 2013  
 Protocol ID: 13S-SEP-CTC-07      Investigator: Dr. Bill Johnson  
 Project ID: 13C04H059A/ Dow Sales      Study Director: Joe Ikley  
 Sponsor Contact: Richard Porter / Fikru Haile

#### Pest Type

W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

#### Pest Code

SETFA, Setaria faberi, = US  
 AMBTR, Ambrosia trifida, = US  
 XANST, Xanthium strumarium, = US

#### Crop Code

ZEAMX, BCOR, Zea mays, = US

#### Part Rated

PLOT = plot  
 YIELD = yield  
 C = Crop is Part Rated  
 P = Pest is Part Rated

#### Rating Type

PHYGEN = phytotoxicity - general / injury  
 CONTRO = control / burndown or knockdown  
 YIELD = yield

#### Rating Unit

% = percent  
 lb/plot = pounds per plot  
 bu/ac = bushels per acre  
 kg/ha = kilograms per hectare

PLOT = total plot

#### ARM Action Codes

P = Rating scale of 0 to 100 (e.g. % control or injury)  
 TY1 = 6.112392\*[16]  
 TY2 = 383.6631\*[16]

# Purdue University Weed Science

## Comparisons of one-pass and two-pass programs in corn

Trial ID: 13S-SEP-CTC-07      Location: SEPAC      Trial Year: 2013  
 Protocol ID: 13S-SEP-CTC-07      Investigator: Dr. Bill Johnson  
 Project ID: 13C04H059A/ Dow Sales      Study Director: Joe Ikley  
 Sponsor Contact: Richard Porter / Fikru Haile

Pest Type		W Weed SETFA	W Weed AMBTR	W Weed XANST		W Weed SETFA			
Pest Code		Setaria faberi	Ambrosia trifi>	Xanthium strum>		Setaria faberi			
Pest Scientific Name		Giant foxtail	Giant ragweed	Heart-leaf coc>		Giant foxtail			
Pest Name									
Crop Code	ZEAMX				ZEAMX				
BBCH Scale	BCOR				BCOR				
Crop Scientific Name	Zea mays				Zea mays				
Crop Name	Corn				Corn				
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P	PLOT C	PLOT P			
Rating Date	6/27/2013	6/27/2013	6/27/2013	6/27/2013	7/5/2013	7/5/2013			
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO			
Rating Unit	%	%	%	%	%	%			
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT			
Days After First/Last Applic.	27 7	27 7	27 7	27 7	35 15	35 15			
Trt-Eval Interval	7 DA-B	7 DA-B	7 DA-B	7 DA-B	0 DA-C	0 DA-C			
ARM Action Codes	P	P	P	P	P	P			
Number of Decimals	0	0	0	0	0	0			
Trt No.	Treatment Name	Rate	Appl Code	1	2	3	4	5	6
1	Untreated Check			0 a	0 d	0 c	0 b	0 a	0 d
2	Impact AAtrex MSO UAN 28%	24.6 g ai/ha B 560 g ai/ha B 1 % v/v B 2.5 % v/v B	B	0 a	91 abc	96 ab	99 a	0 a	88 ab
3	Roundup Powermax N-Pak AMS	1260 g ae/ha B 2.5 % v/v B	B	0 a	99 a	86 b	93 a	0 a	68 c
4	Roundup Powermax Impact AAtrex MSO N-Pak AMS	1260 g ae/ha B 24.6 g ai/ha B 560 g ai/ha B 0.5 % v/v B 2.5 % v/v B	B	1 a	100 a	99 ab	100 a	0 a	94 a
5	Warrant Roundup Powermax Impact AAtrex MSO N-Pak AMS	1260 g ai/ha B 1260 g ae/ha B 24.6 g ai/ha B 560 g ai/ha B 0.5 % v/v B 2.5 % v/v B	B	3 a	95 ab	100 a	99 a	0 a	95 a
6	Halex GT AAtrex NIS N-Pak AMS	2210 g ai/ha B 560 g ai/ha B 0.25 % v/v B 2.5 % v/v B	B	0 a	99 a	98 ab	98 a	0 a	95 a
7	Keystone NXT Hornet DURANGO DMA N-Pak AMS	4130 g ai/ha A 192 g ai/ha A 840 g ae/ha C 2.5 % v/v C	A	1 a	96 a	96 ab	98 a	0 a	91 ab
8	Surestart DURANGO DMA N-Pak AMS	1190 g ai/ha A 840 g ae/ha C 2.5 % v/v C	A	0 a	78 c	90 ab	99 a	0 a	64 c
9	Surestart DURANGO DMA N-Pak AMS	1490 g ai/ha A 840 g ae/ha C 2.5 % v/v C	A	0 a	80 bc	89 ab	98 a	0 a	60 c
10	Surestart AAtrex DURANGO DMA N-Pak AMS	1490 g ai/ha A 1120 g ai/ha A 840 g ae/ha C 2.5 % v/v C	A	0 a	91 abc	89 ab	98 a	0 a	79 b

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Missing data estimates are included in columns: Yates=13; Average=16,17,18

# Purdue University Weed Science

Pest Type		W Weed	W Weed	W Weed		W Weed		
Pest Code		SETFA	AMBTR	XANST		SETFA		
Pest Scientific Name		Setaria faberi	Ambrosia trifi>	Xanthium strum>		Setaria faberi		
Pest Name		Giant foxtail	Giant ragweed	Heart-leaf coc>		Giant foxtail		
Crop Code	ZEAMX				ZEAMX			
BBCH Scale	BCOR				BCOR			
Crop Scientific Name	Zea mays				Zea mays			
Crop Name	Corn				Corn			
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P	PLOT C	PLOT P		
Rating Date	6/27/2013	6/27/2013	6/27/2013	6/27/2013	7/5/2013	7/5/2013		
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO		
Rating Unit	%	%	%	%	%	%		
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Days After First/Last Applic.	27 7	27 7	27 7	27 7	35 15	35 15		
Trt-Eval Interval	7 DA-B	7 DA-B	7 DA-B	7 DA-B	0 DA-C	0 DA-C		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	1	2	3	4	5	6
11 Surestart	1190 g ai/ha B		0 a	94 ab	88 ab	100 a	0 a	95 a
DURANGO DMA	840 g ae/ha B							
N-Pak AMS	2.5 % v/v B							
12 Untreated Check			0 a	0 d	0 c	0 b	0 a	0 d
LSD (P=.05)	1.8		10.7	7.9	6.1	0.0	10.4	
Standard Deviation	1.3		7.4	5.5	4.2	0.0	7.2	
CV	307.48		9.66	7.04	5.19	0.0	10.48	
Bartlett's X2	0.083		16.017	8.927	9.131	0.0	9.133	
P(Bartlett's X2)	0.959		0.042*	0.348	0.243	.	0.166	
Skewness	3.1133*		-1.5972*	-1.7037*	-1.7997*	.	-1.2627*	
Kurtosis	8.0253*		0.9079	1.1744	1.3683*	.	0.1693	

# Purdue University Weed Science

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed	
Pest Code	AMBTR	XANST		SETFA	AMBTR	
Pest Scientific Name	Ambrosia trifi>	Xanthium strum>		Setaria faberi	Ambrosia trifi>	
Pest Name	Giant ragweed	Heart-leaf coc>		Giant foxtail	Giant ragweed	
Crop Code			ZEAMX			
BBCH Scale			BCOR			
Crop Scientific Name			Zea mays			
Crop Name			Corn			
Part Rated	PLOT P	PLOT P	PLOT C	PLOT P	PLOT P	
Rating Date	7/5/2013	7/5/2013	7/18/2013	7/18/2013	7/18/2013	
Rating Type	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO	
Rating Unit	%	%	%	%	%	
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	
Days After First/Last Applic.	35 15	35 15	48 13	48 13	48 13	
Trt-Eval Interval	0 DA-C	0 DA-C	28 DA-B	28 DA-B	28 DA-B	
ARM Action Codes	P	P	P	P	P	
Number of Decimals	0	0	0	0	0	
Trt No.	7	8	9	10	11	
Treatment Name						
Rate						
Rate Unit						
Appl Code						
1 Untreated Check	0 c	0 b	0 a	0 d	0 b	
2 Impact AAtrex MSO UAN 28%	24.6 g ai/ha B 560 g ai/ha B 1 % v/v B 2.5 % v/v B	95 a	94 a	0 a	83 b	99 a
3 Roundup Powermax N-Pak AMS	1260 g ae/ha B 2.5 % v/v B	80 b	88 a	0 a	66 c	93 a
4 Roundup Powermax Impact AAtrex MSO N-Pak AMS	1260 g ae/ha B 24.6 g ai/ha B 560 g ai/ha B 0.5 % v/v B 2.5 % v/v B	94 a	93 a	0 a	83 b	95 a
5 Warrant Roundup Powermax Impact AAtrex MSO N-Pak AMS	1260 g ai/ha B 1260 g ae/ha B 24.6 g ai/ha B 560 g ai/ha B 0.5 % v/v B 2.5 % v/v B	94 a	94 a	0 a	80 b	91 a
6 Halex GT AAtrex NIS N-Pak AMS	2210 g ai/ha B 560 g ai/ha B 0.25 % v/v B 2.5 % v/v B	95 a	90 a	0 a	95 a	99 a
7 Keystone NXT Hornet DURANGO DMA N-Pak AMS	4130 g ai/ha A 192 g ai/ha A 840 g ae/ha C 2.5 % v/v C	94 a	93 a	0 a	100 a	99 a
8 Surestart DURANGO DMA N-Pak AMS	1190 g ai/ha A 840 g ae/ha C 2.5 % v/v C	80 b	95 a	0 a	99 a	99 a
9 Surestart DURANGO DMA N-Pak AMS	1490 g ai/ha A 840 g ae/ha C 2.5 % v/v C	85 ab	91 a	0 a	100 a	100 a
10 Surestart AAtrex DURANGO DMA N-Pak AMS	1490 g ai/ha A 1120 g ai/ha A 840 g ae/ha C 2.5 % v/v C	90 ab	93 a	0 a	100 a	100 a

## Purdue University Weed Science

Pest Type	W Weed	W Weed		W Weed	W Weed	W Weed		
Pest Code	AMBTR	XANST		SETFA	AMBTR	XANST		
Pest Scientific Name	Ambrosia trifi>	Xanthium strum>		Setaria faberi	Ambrosia trifi>	Xanthium strum>		
Pest Name	Giant ragweed	Heart-leaf coc>		Giant foxtail	Giant ragweed	Heart-leaf coc>		
Crop Code			ZEAMX					
BBCH Scale			BCOR					
Crop Scientific Name			Zea mays					
Crop Name			Corn					
Part Rated	PLOT P	PLOT P	PLOT C	PLOT P	PLOT P	PLOT P		
Rating Date	7/5/2013	7/5/2013	7/18/2013	7/18/2013	7/18/2013	7/18/2013		
Rating Type	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%	%		
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Days After First/Last Applic.	35 15	35 15	48 13	48 13	48 13	48 13		
Trt-Eval Interval	0 DA-C	0 DA-C	28 DA-B	28 DA-B	28 DA-B	28 DA-B		
ARM Action Codes	P	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	0		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	7	8	9	10	11	12
11 Surestart	1190 g ai/ha B		90 ab	91 a	0 a	91 a	89 a	95 a
DURANGO DMA	840 g ae/ha B							
N-Pak AMS	2.5 % v/v B							
12 Untreated Check			0 c	0 b	0 a	0 d	0 b	0 c
LSD (P=.05)	7.5	6.0	0.0	7.0	8.4	8.7		
Standard Deviation	5.2	4.2	0.0	4.8	5.8	6.0		
CV	6.95	5.42	0.0	6.49	7.26	7.73		
Bartlett's X2	13.609	16.266	0.0	19.536	20.306	25.258		
P(Bartlett's X2)	0.093	0.039*	.	0.007*	0.005*	0.001*		
Skewness	-1.6772*	-1.792*	.	-1.4888*	-1.7404*	-1.5994*		
Kurtosis	1.1012	1.3587*	.	0.7189	1.2278	0.8533		

# Purdue University Weed Science

Pest Type	W Weed	W Weed	W Weed						
Pest Code	SETFA	AMBTR	XANST						
Pest Scientific Name	Setaria faberi	Ambrosia trifida	Xanthium strumarium						
Pest Name	Giant foxtail	Giant ragweed	Heart-leaf cocklebur						
Crop Code				ZEAMX	ZEAMX	ZEAMX			
BBCH Scale				BCOR	BCOR	BCOR			
Crop Scientific Name				Zea mays	Zea mays	Zea mays			
Crop Name				Corn	Corn	Corn			
Part Rated	PLOT P	PLOT P	PLOT P	YIELD C	YIELD C	YIELD C			
Rating Date	8/22/2013	8/22/2013	8/22/2013	11/8/2013	11/8/2013	11/8/2013			
Rating Type	CONTRO	CONTRO	CONTRO	YIELD	YIELD	YIELD			
Rating Unit	%	%	%	lb/plot	bu/ac	kg/ha			
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT			
Days After First/Last Applic.	83 48	83 48	83 48	161 126	161 126	161 126			
Trt-Eval Interval	63 DA-B	63 DA-B	63 DA-B						
ARM Action Codes	P	P	P		TY1	TY2			
Number of Decimals	0	0	0		1	1			
Trt No.	Treatment Name	Rate	Appl	13	14	15	16	17	18
		Rate Unit	Code						
1	Untreated Check			0 d	0 b	0 c	8.0430178 b	49.2 b	3085.8 b
2	Impact	24.6 g ai/ha B		88 abc	93 a	88 a	27.6259908 a	168.9 a	10599.1 a
	AAtrex	560 g ai/ha B							
	MSO	1 % v/v B							
	UAN 28%	2.5 % v/v B							
3	Roundup Powermax	1260 g ae/ha B		79 c	90 a	73 b	28.6897509 a	175.4 a	11007.2 a
	N-Pak AMS	2.5 % v/v B							
4	Roundup Powermax	1260 g ae/ha B		85 bc	94 a	90 a	27.0873837 a	165.6 a	10392.4 a
	Impact	24.6 g ai/ha B							
	AAtrex	560 g ai/ha B							
	MSO	0.5 % v/v B							
	N-Pak AMS	2.5 % v/v B							
5	Warrant	1260 g ai/ha B		79 c	95 a	90 a	28.4563552 a	173.9 a	10917.7 a
	Roundup Powermax	1260 g ae/ha B							
	Impact	24.6 g ai/ha B							
	AAtrex	560 g ai/ha B							
	MSO	0.5 % v/v B							
	N-Pak AMS	2.5 % v/v B							
6	Halex GT	2210 g ai/ha B		96 a	98 a	89 a	29.6053853 a	181.0 a	11358.5 a
	AAtrex	560 g ai/ha B							
	NIS	0.25 % v/v B							
	N-Pak AMS	2.5 % v/v B							
7	Keystone NXT	4130 g ai/ha A		99 a	100 a	100 a	30.6287491 a	187.2 a	11751.1 a
	Hornet	192 g ai/ha A							
	DURANGO DMA	840 g ae/ha C							
	N-Pak AMS	2.5 % v/v C							
8	Surestart	1190 g ai/ha A		99 a	98 a	98 a	32.4061696 a	198.1 a	12433.1 a
	DURANGO DMA	840 g ae/ha C							
	N-Pak AMS	2.5 % v/v C							
9	Surestart	1490 g ai/ha A		98 a	100 a	99 a	30.7005647 a	187.7 a	11778.7 a
	DURANGO DMA	840 g ae/ha C							
	N-Pak AMS	2.5 % v/v C							
10	Surestart	1490 g ai/ha A		98 a	100 a	100 a	33.0884003 a	202.2 a	12694.8 a
	AAtrex	1120 g ai/ha A							
	DURANGO DMA	840 g ae/ha C							
	N-Pak AMS	2.5 % v/v C							

## Purdue University Weed Science

Pest Type	W Weed	W Weed	W Weed					
Pest Code	SETFA	AMBTR	XANST					
Pest Scientific Name	Setaria faberi	Ambrosia trifida	Xanthium strumarium					
Pest Name	Giant foxtail	Giant ragweed	Heart-leaf cock					
Crop Code				ZEAMX	ZEAMX	ZEAMX		
BBCH Scale				BCOR	BCOR	BCOR		
Crop Scientific Name				Zea mays	Zea mays	Zea mays		
Crop Name				Corn	Corn	Corn		
Part Rated	PLOT P	PLOT P	PLOT P	YIELD C	YIELD C	YIELD C		
Rating Date	8/22/2013	8/22/2013	8/22/2013	11/8/2013	11/8/2013	11/8/2013		
Rating Type	CONTRO	CONTRO	CONTRO	YIELD	YIELD	YIELD		
Rating Unit	%	%	%	lb/plot	bu/ac	kg/ha		
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Days After First/Last Applic.	83 48	83 48	83 48	161 126	161 126	161 126		
Trt-Eval Interval	63 DA-B	63 DA-B	63 DA-B					
ARM Action Codes	P	P	P		TY1	TY2		
Number of Decimals	0	0	0		1	1		
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	13	14	15	16	17	18
11 Surestart	1190 g ai/ha B		94 ab	95 a	91 a	34.1027944 a	208.4 a	13084.0 a
DURANGO DMA	840 g ae/ha B							
N-Pak AMS	2.5 % v/v B							
12 Untreated Check			0 d	0 b	0 c	10.5655071 b	64.6 b	4053.6 b
LSD (P=.05)	8.3	6.5	12.1	5.99098617	36.62	2298.52		
Standard Deviation	5.8	4.5	8.4	4.08511783	24.97	1567.31		
CV	7.6	5.65	10.97	15.27	15.27	15.27		
Bartlett's X2	13.3	6.553	12.861	3.366	3.366	3.366		
P(Bartlett's X2)	0.15	0.364	0.076	0.985	0.985	0.985		
Skewness	-1.5529*	-1.7711*	-1.5669*	-1.2792*	-1.2792*	-1.2792*		
Kurtosis	0.8022	1.3102	0.8161	0.7224	0.7224	0.7224		

# Purdue University Weed Science

## Comparisons of one-pass and two-pass programs in corn

Trial ID: 13S-SEP-CTC-07	Location: SEPAC	Trial Year: 2013
Protocol ID: 13S-SEP-CTC-07	Investigator: Dr. Bill Johnson	
Project ID: 13C04H059A/ Dow Sales	Study Director: Joe Ikley	
	Sponsor Contact: Richard Porter / Fikru Haile	

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 6/27/2013 PHYGEN % 1 PLOT 27 7 7 DA-B P 0 (Data Column 1)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	91.666667			
Replicate	3	8.333333	2.777778	1.692	0.1877
Treatment	11	29.166667	2.651515	1.615	0.1401
Error	33	54.166667	1.641414		

Randomized Complete Block (RCB) AOV For W Weed SETFA Setaria faberi Giant foxtail PLOT P 6/27/2013 CONTRO % 1 PLOT 27 7 7 DA-B P 0 (Data Column 2)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	60931.250000			
Replicate	3	218.750000	72.916667	1.323	0.2835
Treatment	11	58893.750000	5353.977273	97.144	0.0001
Error	33	1818.750000	55.113636		

Randomized Complete Block (RCB) AOV For W Weed AMBTR Ambrosia trifida Giant ragweed PLOT P 6/27/2013 CONTRO % 1 PLOT 27 7 7 DA-B P 0 (Data Column 3)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	59850.000000			
Replicate	3	229.166667	76.388889	2.564	0.0714
Treatment	11	58637.500000	5330.681818	178.894	0.0001
Error	33	983.333333	29.797980		

Randomized Complete Block (RCB) AOV For W Weed XANST Xanthium strumarium Heart-leaf cocklebur PLOT P 6/27/2013 CONTRO % 1 PLOT 27 7 7 DA-B P 0 (Data Column 4)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	64657.812500			
Replicate	3	39.062500	13.020833	0.726	0.5440
Treatment	11	64026.562500	5820.596591	324.356	0.0001
Error	33	592.187500	17.945076		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 7/5/2013 PHYGEN % 1 PLOT 35 15 0 DA-C P 0 (Data Column 5)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	0.000000000000			
Replicate	3	0.000000000000	0.000000000000	0.000	1.0000
Treatment	11	0.000000000000	0.000000000000	0.000	1.0000
Error	33	0.000000000000	0.000000000000		

Randomized Complete Block (RCB) AOV For W Weed SETFA Setaria faberi Giant foxtail PLOT P 7/5/2013 CONTRO % 1 PLOT 35 15 0 DA-C P 0 (Data Column 6)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	54997.916667			
Replicate	3	452.083333	150.694444	2.886	0.0503
Treatment	11	52822.916667	4802.083333	91.977	0.0001
Error	33	1722.916667	52.209596		

Randomized Complete Block (RCB) AOV For W Weed AMBTR Ambrosia trifida Giant ragweed PLOT P 7/5/2013 CONTRO % 1 PLOT 35 15 0 DA-C P 0 (Data Column 7)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	56070.312500			
Replicate	3	368.229167	122.743056	4.561	0.0088
Treatment	11	54814.062500	4983.096591	185.178	0.0001
Error	33	888.020833	26.909722		

Randomized Complete Block (RCB) AOV For W Weed XANST Xanthium strumarium Heart-leaf cocklebur PLOT P 7/5/2013 CONTRO % 1 PLOT 35 15 0 DA-C P 0 (Data Column 8)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	57216.666667			
Replicate	3	54.166667	18.055556	1.044	0.3861
Treatment	11	56591.666667	5144.696970	297.416	0.0001
Error	33	570.833333	17.297980		

## Purdue University Weed Science

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn PLOT C 7/18/2013 PHYGEN % 1 PLOT 48 13 28 DA-B P 0 (Data Column 9)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	0.000000000000			
Replicate	3	0.000000000000	0.000000000000	0.000	1.0000
Treatment	11	0.000000000000	0.000000000000	0.000	1.0000
Error	33	0.000000000000	0.000000000000		

Randomized Complete Block (RCB) AOV For W Weed SETFA Setaria faberi Giant foxtail PLOT P 7/18/2013 CONTRO % 1 PLOT 48 13 28 DA-B P 0 (Data Column 10)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	59170.666667			
Replicate	3	181.833333	60.611111	2.580	0.0701
Treatment	11	58213.666667	5292.151515	225.295	0.0001
Error	33	775.166667	23.489899		

Randomized Complete Block (RCB) AOV For W Weed AMBTR Ambrosia trifida Giant ragweed PLOT P 7/18/2013 CONTRO % 1 PLOT 48 13 28 DA-B P 0 (Data Column 11)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	63597.916667			
Replicate	3	118.750000	39.583333	1.168	0.3369
Treatment	11	62360.416667	5669.128788	167.223	0.0001
Error	33	1118.750000	33.901515		

Randomized Complete Block (RCB) AOV For W Weed XANST Xanthium strumarium Heart-leaf cocklebur PLOT P 7/18/2013 CONTRO % 1 PLOT 48 13 28 DA-B P 0 (Data Column 12)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	62801.916667			
Replicate	3	63.083333	21.027778	0.581	0.6315
Treatment	11	61544.916667	5594.992424	154.646	0.0001
Error	33	1193.916667	36.179293		

Randomized Complete Block (RCB) AOV For W Weed SETFA Setaria faberi Giant foxtail PLOT P 8/22/2013 CONTRO % 1 PLOT 83 48 63 DA-B P 0 (Data Column 13)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	46	59682.438017			
Replicate	3	758.574380	252.858127	7.575	0.0006
Treatment	11	57855.681818	5259.607438	157.564	0.0001
Error	32	1068.181818	33.380682		

Randomized Complete Block (RCB) AOV For W Weed AMBTR Ambrosia trifida Giant ragweed PLOT P 8/22/2013 CONTRO % 1 PLOT 83 48 63 DA-B P 0 (Data Column 14)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	62824.479167			
Replicate	3	118.229167	39.409722	1.925	0.1447
Treatment	11	62030.729167	5639.157197	275.480	0.0001
Error	33	675.520833	20.470328		

Randomized Complete Block (RCB) AOV For W Weed XANST Xanthium strumarium Heart-leaf cocklebur PLOT P 8/22/2013 CONTRO % 1 PLOT 83 48 63 DA-B P 0 (Data Column 15)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	47	60886.979167			
Replicate	3	114.062500	38.020833	0.541	0.6573
Treatment	11	58455.729167	5314.157197	75.681	0.0001
Error	33	2317.187500	70.217803		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn YIELD C 11/8/2013 YIELD lb/plot 1 PLOT 161 126 (Data Column 16)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	36	3736.399298			
Replicate	3	231.337856	77.112619	4.621	0.0118
Treatment	11	3137.921386	285.265581	17.094	0.0001
Error	22	367.140055	16.688184		

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn YIELD C 11/8/2013 YIELD bu/ac 1 PLOT 161 126 TY1 1 (Data Column 17)					
Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	36	139596.869442			
Replicate	3	8643.091376	2881.030459	4.621	0.0118
Treatment	11	117236.935108	10657.903192	17.094	0.0001
Error	22	13716.842958	623.492862		

## Purdue University Weed Science

Randomized Complete Block (RCB) AOV For ZEAMX BCOR Zea mays Corn YIELD C 11/8/2013 YIELD kg/ha 1 PLOT 161 126 TY2 1 (Data Column 18)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	36	549988165.940871			
Replicate	3	34052325.047563	11350775.015854	4.621	0.0118
Treatment	11	461893788.723000	41990344.429364	17.094	0.0001
Error	22	54042052.170309	2456456.916832		

### Pest Type

W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

### Pest Code

SETFA, Setaria faberi, = US

AMBTR, Ambrosia trifida, = US

XANST, Xanthium strumarium, = US

### Crop Code

ZEAMX, BCOR, Zea mays, = US

### Part Rated

PLOT = plot

YIELD = yield

C = Crop is Part Rated

P = Pest is Part Rated

### Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

YIELD = yield

### Rating Unit

% = percent

lb/plot = pounds per plot

bu/ac = bushels per acre

kg/ha = kilograms per hectare

PLOT = total plot

### ARM Action Codes

P = Rating scale of 0 to 100 (e.g. % control or injury)

TY1 = 6.112392\*[16]

TY2 = 383.6631\*[16]